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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/451,915	12/01/1999	RYUJI NISHIMURA	H-864	9658

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EXAMINER	
YE, LIN	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/451,915	NISHIMURA ET AL.	
	Examiner	Art Unit	
	Lin Ye	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-11, 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, in view of Suzuki et al. U.S. Patent 5,786,852, in view of Nobuoka, U. S. Patent 5,986,698, and further in view of Kato, U.S. Patent 6,148,031.

Regarding claim 1, the admitted prior art teaches cameras that are able to pick up both still and motion images (page I, lines 14-15). The admitted prior art teaches an image pickup device (page 1, line 5) comprising: a photoelectric sensor (CCD), wherein the pixel signals accumulated in each pixels are outputted with interlace by subsampling the pixel signals for every one line when capturing a still image, which reads on a first signal read mode (page 2, lines 2-7). It is an inherent feature of a CCD to have pixels arranged in the vertical and horizontal directions for converting the light focused on the pixels to electric pixel signals. The admitted Prior art teaches that for a still image, pixel signals of odd number lines are read on the first field, pixel signals of even number lines are read on the second field, and the

still image is generated by sequentially converting the signals of the first and second fields, which reads on an interlace/non-interlace converter for converting the signals with the interlace, which output from the photoelectric sensor in the first signal read mode, to a non-interlaced signal (page 2, lines 59).

The admitted prior art does not teach that a sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in a second signal read mode.

The Suzuki reference teaches in Figure 7A, an image pickup device comprising: a photoelectric sensor having pixels arranged in the vertical and horizontal directions for converting light focused on the pixels to electric pixel signals, the pixel signals accumulated in each of the pixels are outputted with interlace by subsampling the pixel signals for every one line in a first signal read mode (e.g., a frame reading mode as the first signal read mode, signals of pixels **with interlace** on odd numbered lines and those on even numbered lines are transferred **separately** to the vertical transfer part, see Col. 1, lines 37-40), and a sum of the pixel signals in the sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in a second signal read mode (e.g., a field reading mode as the second signal read mode, signals of **all pixels** are acquired into the vertical transfer part signals of two pixels adjacent in the vertical direction are added together– this is considered as the signals output with **non-interlace** in this mode). The Suzuki reference is evidenced that one of ordinary skill in the art at tine time to see more advantages for driving CCD has more flexible methods, such as read signals of pixels **with interlace** on odd numbered lines and those on even numbered lines are transferred

separately to the vertical transfer part in the first reading mode; and sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in the second reading mode, so that the image pickup device be able to generate retain resolution for high-quality still images and improve temporal scalability and sensitivity for moving images with fast scanning in solid state imaging device. For that reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in the second signal read mode taught by Suzuki.

The admitted prior art does not teach a signal processor for converting signals in a specified format, or a rate converter for the number of the video (moving) signals into another number and from a non-interlaced scan into an interlaced scan.

The Nobuoka reference teaches that predetermined processes are applied to the outputted signals to generate standard television signals, i.e. NTSC or PAL (col. 5, lines 55-66). The signal processor for converting signals in a specified format and the rate converter that converts the non-interlace images to interlace images are inherently taught. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a signal processor for converting signals in a specified format, or a rate converter for the number of the video (moving) signals into another number and from a non-interlaced scan into an interlaced taught by Nobuoka into the image pickup device taught by the admitted prior art to make the image pickup device that outputs the video signals without interlace while subsequently converting them to interlace. One of ordinary skill would have

been motivated to make such a modification to make image pickup device having more flexible option to meet various type television standard, such as NTSC, PAL or computer monitor (See, Col. 1, lines 60-63).

The admitted prior art also does not teach an encoder for compressing the signals from the signal processor, a memory device, or a decoder.

The Kato reference teaches an encoder (image compression/decompression circuit 18) for generating a first or second image data by compressing the first or second signals output from the signal processor (digital signal processor circuit 14) (col. 3, lines 42-53); a memory device (first memory 20) for memorizing the first or second image data output from the encoder (image compression/decompression circuit 18) (col. 3, lines 46-47, 50-53); and a decoder (image compression/decompression circuit 18) for reproducing the first signal by decoding the first image data memorized in the memory device (first memory 20) (col. 5, lines 23-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interlace/non-interlace reading methods of the admitted prior art in view of Suzuki and Nobuoka with the compression/decompression units of Kato to make an image sensing apparatus that reads still and motion images using the same image pickup device, and processes, encodes, stores, and decodes the data. One of ordinary skill would have been motivated to make such a modification to enable a camera to process both still and motion images so as to minimize the amount of memory required to store the images.

Regarding claim 3, the admitted prior art teaches that the first signal generated in the first signal read mode is a still image (page 2, line 2), and the second signal generated in the second signal read mode is a motion image signal (page 1, line 25).

Regarding claim 4, the admitted prior art teaches that the effective pixel number of said photoelectric sensor in vertical direction approximates multiplication by an integer of the effective number of scanning lines in the television signal standard (page 2, lines 15-17).

Regarding claim 5, Kato teaches that individual images may be tagged as still images, which reads on the first image data representing one still image, and that the images captured during continuous image taking are a series of still images (col. 3, lines 47-56).

Regarding claim 6, the admitted prior art teaches that said arrangement of said pixels on said photoelectric sensor has a cycle of a units of two rows in the vertical direction and four lines in the horizontal direction, the pixels of the first color and the pixels of the second color are arranged alternately in the first lines, the pixels of the third color and the pixels of the fourth color are arranged alternately in the second lines, the pixels of the second color and the pixels of the first color are arranged alternately in the third lines, and the pixels of the third color and the pixels of the fourth color are arranged alternately in the fourth lines (page 1, line 20-23; Fig. 3A).

Regarding claim 7, the admitted prior art teaches that said first color is magenta, said second color is green, said third color is cyan, and said fourth color is yellow (Fig. 3A).

Regarding claim 8, the admitted prior art teaches the use of green, blue, and red as the colors in the color filter (page 2, lines 17-20; Fig. 3C). It would have been obvious to one of

ordinary skill to substitute the green, blue, and red colors into the filter arrangement of claim 6.

Regarding claim 9, the admitted prior art teaches that the effective pixel number of said photoelectric sensor in vertical direction approximates multiplication by an integer of the effective number of scanning lines in the television signal standard (page 2, lines 15-17).

Regarding claim 10, the admitted prior art teaches that the effective pixel number of said photoelectric sensor is 960, which is between 920 and 1020 (page 2, line 16).

Regarding claim 11, the admitted prior art teaches cameras that are able to pick up both still and motion images (page I, lines 14-15). The admitted prior art teaches an image pickup device (page 1, line 5) comprising: a photoelectric sensor (CCD), wherein the pixel signals accumulated in each pixels are outputted with interlace by subsampling the pixel signals for every one line when capturing a still image, which reads on a first signal read mode (page 2, lines 2-7). It is an inherent feature of a CCD to have pixels arranged in the vertical and horizontal directions for converting the light focused on the pixels to electric pixel signals. The admitted Prior art teaches that for a still image, pixel signals of odd number lines are read on the first field, pixel signals of even number lines are read on the second field, and the still image is generated by sequentially converting the signals of the first and second fields, which reads on an interlace/non-interlace converter for converting the signals with the interlace, which output from the photoelectric sensor in the first signal read mode, to a non-interlaced signal (page 2, lines 59).

The admitted prior art does not teach that a sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in a second signal read mode.

The Suzuki reference teaches in Figure 7A, an image pickup device comprising: a photoelectric sensor having pixels arranged in the vertical and horizontal directions for converting light focused on the pixels to electric pixel signals, the pixel signals accumulated in each of the pixels are outputted with interlace by subsampling the pixel signals for every one line in a first signal read mode (e.g., a frame reading mode as the first signal read mode, signals of pixels **with interlace** on odd numbered lines and those on even numbered lines are transferred **separately** to the vertical transfer part, see Col. 1, lines 37-40), and a sum of the pixel signals in the sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in a second signal read mode (e.g., a field reading mode as the second signal read mode, signals of **all pixels** are acquired into the vertical transfer part signals of two pixels adjacent in the vertical direction are added together– this is considered as the signals output with **non-interlace** in this mode). The Suzuki reference is evidenced that one of ordinary skill in the art at tine time to see more advantages for driving CCD has more flexible methods, such as read signals of pixels **with interlace** on odd numbered lines and those on even numbered lines are transferred **separately** to the vertical transfer part in the first reading mode; and sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in the second reading mode, so that the image pickup device be able to generate retain resolution for high-quality still images and improve temporal scalability and

sensitivity for moving images with fast scanning in solid state imaging device. For that reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the sum of the pixel signals in the two pixels adjoining each other in the vertical direction are sequentially outputted with **non-interlace** in the second signal read mode taught by Suzuki.

The admitted prior art does not teach a signal processor for converting signals in a specified format, or a rate converter for the number of the video (moving) signals into another number and from a non-interlaced scan into an interlaced scan.

The Kato reference teaches an encoder (image compression/decompression circuit 18) for generating a first or second image data by compressing data volume in frames of the first or second video signals output from the signal processor by a first compressing method (col. 3, lines 42-47), and generating a third image data by compressing data volume in frames of the second video signals by a second compressing method (col. 3, lines 54-58); a memory device (first memory 20 and second memory 22) for memorizing the first or second image data and the third image data that are output from the encoder (col. 3, lines 46-47, 61-63); and a decoder (image compression/decompression circuit 18) for reproducing the first or second video signal by decoding the first or second image data and the third image data that are memorized in the memory device (col. 4, lines 36-37). As data must be decompressed before being displayed, it would have been obvious for the decoder to decode the third image data as well. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interlace/non-interlace reading methods of the admitted prior art in view of Suzuki and Nobuoka with the

compression/decompression units of Kato to make an image sensing apparatus that reads still and motion images using the same camera, and processes, encodes, stores, and decodes the data. One of ordinary skill would have been motivated to make such a modification to enable a camera to process both still and motion images so as to minimize the amount of memory required to store the images.

Regarding claims 13, the admitted prior art teaches that the first signal generated in the first signal read mode is a still image (page 2, line 2), and the second signal generated in the second signal read mode is a motion image signal (page 1, line 25).

Regarding claim 14, the admitted prior art teaches that the effective pixel number of said photoelectric sensor in vertical direction approximates multiplication by an integer of the effective number of scanning lines in the television signal standard (page 2, lines 15-17).

Regarding claim 15, Kato teaches that individual images may be tagged as still images, which reads on the first image data representing one still image, and that the images captured during continuous image taking are a series of still images (col. 3, lines 47-56).

Regarding claim 16, the admitted prior art teaches that said arrangement of said pixels on said photoelectric sensor has a cycle of a units of two rows in the vertical direction and four lines in the horizontal direction, the pixels of the first color and the pixels of the second color are arranged alternately in the first lines, the pixels of the third color and the pixels of the fourth color are arranged alternately in the second lines, the pixels of the second color and the pixels of the first color are arranged alternately in the third lines, and the pixels of the third color and the pixels of the fourth color are arranged alternately in the fourth lines (page 1, line 20-23; Fig. 3A).

Regarding claim 17, the admitted prior art teaches that said first color is magenta, said second color is green, said third color is cyan, and said fourth color is yellow (Fig. 3A).

Regarding claim 18, the admitted prior art teaches the use of green, blue, and red as the colors in the color filter (page 2, lines 17-20; Fig. 3C). It would have been obvious to one of ordinary skill to substitute the green, blue, and red colors into the filter arrangement of claim 6.

Regarding claim 19, the admitted prior art teaches that the effective pixel number of said photoelectric sensor in vertical direction approximates multiplication by an integer of the effective number of scanning lines in the television signal standard (page 2, lines 15-17).

Regarding claims 20, the admitted prior art teaches that the effective pixel number of said photoelectric sensor is 960, which is between 920 and 1020 (page 2, line 16).

4. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, in view of Suzuki et al. U.S. Patent 5,786,852, in view of Nobuoka, U.S. Patent 5,986,698, in view of Kato, U.S. Patent 6,148,031, and further in view of Okayama et al, U. S. Pub. No. 2003/0122941.

Regarding claim 2, the admitted prior art in view of Suzuki, in view of Nobuoka and in view of Kato teach the apparatus according to claim 1. See above. The admitted prior art in view of Suzuki, in view of Nobuoka and in view of Kato do not teach that said interlace/non-interlace converter and said rate converter comprises a memory for storing said signals output from the photoelectric sensor, and a memory controller for controlling writing and reading addresses and timings.

The Okayama reference teaches that interlaced signals are stored in frame memory locations based on whether the signals come from an odd- or even-numbered line [0069]. The signals are read out of memory by successively reading one odd frame followed by one even frame [0070]. The memory controller is inherently taught. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus taught by the admitted prior art in view of Suzuki, in view of Nobuoka and in view of Kato with the practice of storing and reading out interlaced signals taught by Okayama et al to make an apparatus that stores interlaced signals in a predetermined fashion and reads out the signals in order to convert them to a non-interlaced format. One of ordinary skill would have been motivated to make such a modification to achieve a slower refresh rate while reproducing entire images.

Regarding claim 12, the admitted prior art in view of Suzuki, in view of Nobuoka and in view of Kato teach the apparatus according to claim 11. See above. The admitted prior art in view of Suzuki, in view of Nobuoka and in view of Kato do not teach that said interlace/non-interlace converter and said rate converter comprises a memory for storing said signals output from the photoelectric sensor, and a memory controller for controlling writing and reading addresses and timings.

The Okayama reference teaches that interlaced signals are stored in frame memory locations based on whether the signals come from an odd- or even-numbered line [0069]. The signals are read out of memory by successively reading one odd frame followed by one even frame [0070]. The memory controller is inherently taught. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine the apparatus taught by the admitted prior art in view of Suzuki, in view of Nobuoka and in view of Kato with the practice of storing and reading out interlaced signals taught by Okayama et al to make an apparatus that stores interlaced signals in a predetermined fashion and reads out the signals in order to convert them to a non-interlaced format. One of ordinary skill would have been motivated to make such a modification to achieve a slower refresh rate while reproducing entire images.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
   a. Lee et al. U.S. Patent 6,614,477 discloses a variable frame rate image capture device output image data based on the commanded frame rate.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Ye whose telephone number is (703) 305-3250. The examiner can normally be reached on Mon-Fri 8:00AM-5:00PM.

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew B Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lin Ye
Examiner
Art Unit 2615

December 23, 2004